

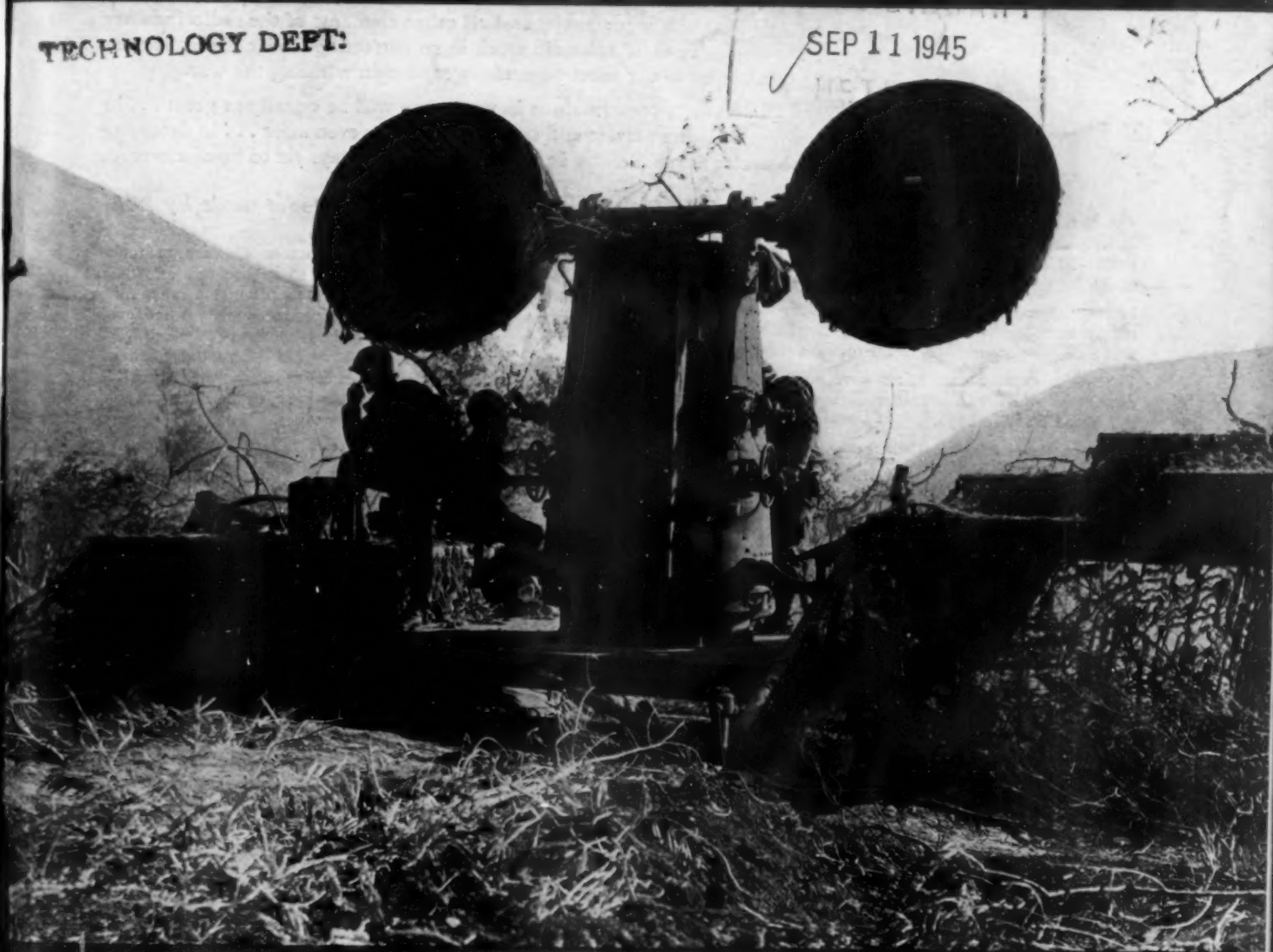
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SCIENCE NEWS LETTER

THE VOLUNTARY SERVICE OF SCIENTISTS SEPTEMBER 8, 1945

TECHNOLOGY DEPT:

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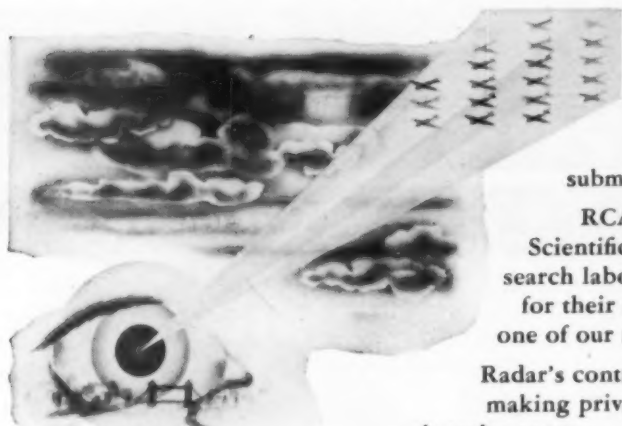


"Mickey Mouse"

See Page 451

A SCIENCE SERVICE PUBLICATION

RCA's role in RADAR



The story of Radar—the magic beam that enabled the United States Navy to sink a Jap battleship eight miles away at night . . . that helped save England in her darkest hours by detecting enemy planes . . . that automatically aims guns and detects submarines . . . this whole story is now officially released.

RCA takes this opportunity to congratulate the Office of Scientific Research and Development, the Army and Navy research laboratories and all other elements of the radio industry for their splendid work in so perfecting Radar that it became one of our most powerful weapons in winning the war.

Radar's contributions in peacetime will be equally as great . . . in making private and commercial flying even safer . . . in detecting obstacles at sea . . . and in hundreds of other ways yet to be discovered.

As for our part in this great effort, we here list the major developments in Radar made by RCA

1932—RCA Laboratories originated micro-wave equipment, which later was used in successful radar experiments.

1934—Echoes were obtained with micro-wave equipment set up near Sandy Hook. This experiment showed for the first time the potentialities of micro-wave radar.

1935—An experimental micro-wave pulse radar system was developed by RCA Laboratories. It was demonstrated to the Army and Navy in 1936.

1936—A lower frequency high power radar was supplied to the Army by RCA.

1937—RCA micro-wave radar was used to scan the Philadelphia skyline with cathode ray indication essentially the same used in today's newest radar sets.

1937—RCA developed an airborne pulse radar. This equipment operated very satisfactorily for detecting obstacles such as mountains, and was also invaluable as an altimeter. It was demonstrated to the Army and Navy in 1937, and at their request was classified as "secret."

1938—RCA started development of a practical altimeter employing FM principles. This and the RCA pulse altimeter later became standard equipment for the Army, Navy, and the British. A large quantity of altimeters of these types have been manufactured for controlling the height of paratroop planes at the time of jumping, for use in bombing enemy ships, and for other military purposes.

1938-9—RCA Victor manufactured the first radar equipment purchased by the Navy.

1939-40—Twenty high-power sets, based on the Navy's design, were developed and installed by RCA Victor in the Navy's important vessels.

1940—RCA developed and built radar apparatus which was especially suited for use on destroyers, and apparatus designed especially for submarines. These equipments were among the earliest procured by the Navy, and have proved very successful.

1940—Experience in the manufacture of vacuum tubes made it possible for RCA Victor to be the first and only manufacturer in the United States to produce a radar tube developed in England. RCA also produces many other types of radar tubes, including the cathode ray tubes of which RCA is largest manufacturer in the world. RCA's unchallenged leadership in cathode ray tubes for radar was made possible by extensive developments in television, since television, too, requires high quality cathode ray tubes.

1941—RCA Victor supplied receivers and indicators for the type of radar then used by the Army.

1942—Loran, a system of long-range navigation, was manufactured by several firms, but difficulties were encountered because of size and weight of the receiver. In 1942 RCA Laboratories undertook the design of a simplified, compact receiver, and achieved such success that large quantities were ordered from RCA Victor and from other firms instructed in RCA's design, and other types were discontinued.

Some of RCA developments are of major importance in developments of other concerns engaged in radar manufacture.

RCA gave complete design and instruction to other firms in altimeters, tail warning devices, bombing devices, tubes, Loran receivers and other radar equipment designed and developed by RCA.

Several hundred RCA specialists were abroad during the war servicing radar and communication services for Army and Navy equipment made by RCA and other firms.

RCA was represented on the National Defense Research Committee and on other government technical committees on war activities.

RCA engineers have been loaned to government laboratories for special radar projects.

RCA has co-operated with England in radar projects.



Radio Corporation of America

30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

CHEMISTRY

DDT Can Wipe Out Plagues

In total war against disease-carrying insects, it could eliminate typhus, malaria and African sleeping sickness, Swiss chemists declare.

► DDT CAN send malaria mosquitoes, typhus lice and other disease-carrying insects to join the dodo and the dinosaur in the limbo of extinct species, thereby ending these particular plagues for all time.

This was the promise held out by the two Swiss chemists who started DDT on its present spectacular career as a killer of insects, Dr. Paul Lauger, technical director of the firm of J. R. Geigy, S.A., and Dr. Paul Muller, inventor of the DDT insecticides, at a press conference in New York.

African sleeping sickness, spread by the tsetse fly, was another scourge mentioned as a possible candidate for extinction. The area in Africa that is now practically an unpopulated waste because of the menace of this terrible disease could be hemmed in by a cordon of DDT-armed insect-fighters, who would press constantly in upon the fly-infested terrain both in the air and over the ground, until the last acre had been mopped up.

Mass attacks of this kind, Drs. Lauger and Muller admitted, would cost money and take time; but the cost in either would be only a fraction of that demanded by war—and human lives would be saved, not recklessly spilled. Such campaigns would also be devastating to beneficial insects and other cold-blooded forms of life, they said, but they claimed these could repopulate the areas by inward dispersal from the unsprayed margins.

On a less sweeping scale, but still on a major field campaign basis, the two Swiss chemists pointed out how DDT can be used to combat some of our worst crop pests, like boll weevil and other cotton insects. These often constitute the bulk of the insect life of the large fields where the crops are grown, so that damage to beneficial insect populations becomes a less serious consideration.

DDT can even be used in warfares against dug-in insect enemies, it has been discovered. It can be used effectively in this way against the grubs or larvae of the Japanese beetle, though oddly enough it has not been found particularly poisonous to their close cousins, the big white grubs that grow up to turn into

Junebugs or May beetles. Another ground-dwelling pest that succumbs to DDT is the roundworm or nematode that causes root rot, a disease afflicting many plants.

For some of these mass attacks, DDT has been found a hundred times more effective than the arsenical poisons hitherto in use. For instance, 15 pounds of DDT per acre will be as effective against Japanese beetle larvae as 1500 pounds of a standard arsenic compound applied to the same area, Drs. Lauger and Muller stated.

DDT can be applied by practically any method now in use with other insecticides. It is especially effective dissolved in Freon and released as an aerosol, but it also works well dissolved in kerosene or other light oils and used with ordinary spraying machinery. It is only slightly soluble in water, but oil solutions can be easily made into emulsions. Dispersed in inert powdered materials such as talc

or kaolin, DDT is an excellent crop-dusting medium.

One of the most promising carriers for household use of DDT seems to be wall paint. Since flies, mosquitoes and other domestic pests need only to touch it with their feet in order to pick up enough to kill them, a DDT-carrying painted surface turns the whole interior of a room into a big death-trap for them. Several well-known commercial firms are already manufacturing DDT paints.

Such paints are effective only as long as their surface remains clean. Coatings of dirt or grease form protecting layers between the poison and the feet of the insects, causing loss of killing potency. Paints that tend to scale or crumble a little, thereby automatically keeping fresh surfaces exposed, promise to be especially good as DDT carriers.

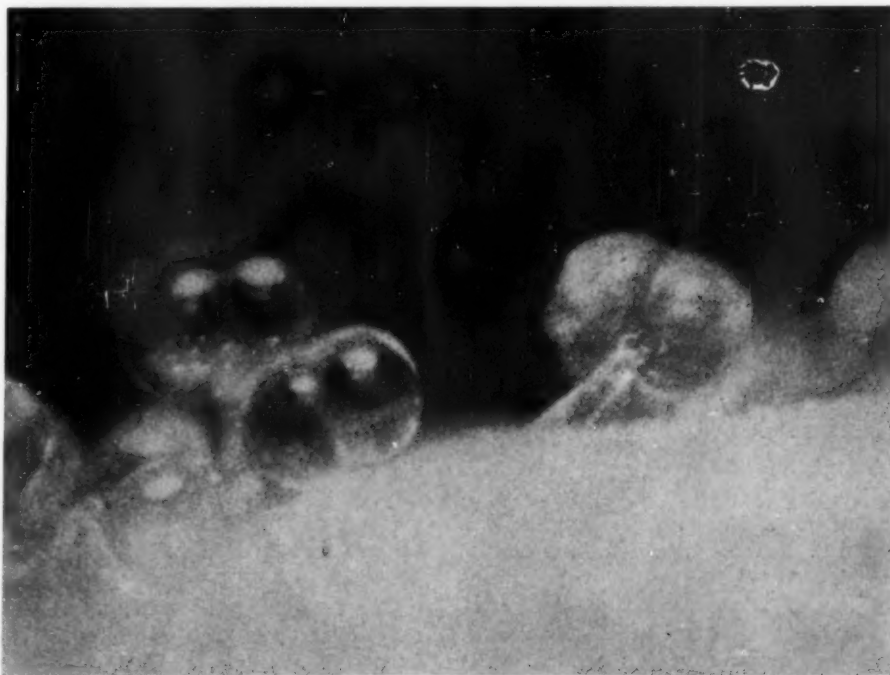
Shelf age, the Swiss scientists declared, holds no terrors for DDT. It stays good indefinitely, either in pure crystal form or in the various solutions.

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PLANT PHYSIOLOGY

Leaf Glands on Plant Resist Drought

► THE FIRST pair of true leaves appearing on the sesame, an herb bearing seeds from which an oil is obtained, be-



RESIST DROUGHT—Glands on the foliage of a sesame plant, as shown in this greatly magnified picture, look like sets of four little soap bubbles on stems. Plants well-equipped with glands seem to be more resistant to drought than plants with bare leaf surfaces.

tray whether the plant will be able to withstand long droughts or excessive rainfall.

During a period of drought, varieties with many leaf glands showed less wilting than the types with few glands, Dr. D. G. Langham of the Department of Genetics, Instituto Experimental de Agricultura y Zootecnica, Caracas, Venezuela, reports in the *Journal of Heredity*. During a period of excessive rainfall, on the other hand, varieties with few leaf glands were more resistant to "wet feet".

AGRICULTURE

Distribution Problem

Is seen as the big puzzle in feeding the world. Fewer farmers may actually produce more food if more man-hours are devoted to handling.

► **FEEDING** a world constantly hovering on the thin edge of hunger was presented as a problem of processing and transportation more than of actual labor on the farm itself, by Paul H. Appleby, formerly Under Secretary of Agriculture, now director of Station KIRO, Seattle, speaking before the Sixth Conference on Science, Philosophy and Religion, in New York.

Citing conclusions reached at the international food conference held at Hot Springs, Va., Mr. Appleby pointed out that among other things they "hint at the anomalous fact that the world can be better fed only by reducing the proportion of the world's productive man-hours going into agriculture, and, conversely, by putting more man-hours into the production of other things—roads and railways, machinery, storage facilities, processing plants, household facilities, power plants, etc."

More food, he stated, is produced per capita in countries where agricultural technology is advanced as contrasted with countries having small hand-tool, subsistence type farmers.

Raising the level of all nations' capacity to support themselves, Mr. Appleby contended, does not demand assumption of a Santa Claus role by the United States or any other one country, but rather improvement in international cooperation through interchange of ideas and information of mutual benefit to all.

"The quickest and most certain improvement in communication will be between scientists," Mr. Appleby declared. "Research is essentially international in

With a little practice it is not necessary to use a lens in determining whether the leaf surface has few or many glands, which look like quadruplet soap bubbles on stems. In connection with experiments to develop varieties of sesame adapted to culture in Venezuela, a large number of varieties were studied. It was found that when plants with many leaf glands are crossed with plants with smooth leaves, the hybrid has the glands and so do three out of four of the plants from it.

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its approach and in its implications. Scientists wherever they work have constituted one body, even though somewhat nebulous. And the essential unity of scientists carries over to technology and education. In these fields specialized association may be expected to increase markedly with new stimulation and facilities. The numbers concerned, their proportion to total population, and their direct influence will vary greatly among the different national societies, although all three groups will exist in all societies."

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CHEMISTRY

Antianemia Vitamin Factor Isolated in Pure Form

► **CRYSTALS** of a pure chemical which is a form of an antianemia vitamin have been isolated for the first time by scientists at the research laboratories of Parke, Davis and Company in Detroit.

This vitamin chemical is known only by the technical name of vitamin B₁₂ conjugate. Its isolation is announced in *Science* (Aug. 31). Scientists reporting the work are Drs. J. J. Piffner, D. G. Calkins, B. L. O'Dell, E. S. Bloom, R. A. Brown, C. J. Campbell, O. D. Bird.

The vitamin is related to another vitamin called folic acid. Synthesis of the latter by scientists at Lederle Laboratories, Pearl River, N. Y., was announced a few weeks ago. This vitamin apparently exists in a number of chemical forms in different substances, such as liver and yeast. As various scientists have discov-

ered one or another of its forms, because of its effects on blood formation in monkeys or chicks or its importance for the growth of certain bacteria, they have given varying names to the substances. Some of these substances may be identical. At least five different ones are believed to exist.

Isolation in pure chemical form of vitamin B₁₂ conjugate and the synthesis of folic acid may lead to further knowledge about all these related vitamin factors and what part any or all of them play in human health and nutrition.

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PHYSICS-ASTRONOMY

Atom Started Universe

Whole universe began as explosion of a single giant atom two billion years ago, is the suggestion of a Belgian scientist. Uranium bearing rocks support theory.

► ATOMIC explosions that wipe out whole cities in an instant seem awesome on a human, planetary scale. Seen from a cosmic grandstand, however, they are scarcely even sparks from a single powder-grain in the grand pyrotechnics of the universe.

Indeed, according to one bold theory, the whole visible universe, with great pinwheel galaxies containing millions of flaming stars, and with possible swarms of planets like the earth that have never been seen and only lately have been rather vaguely guessed at, got its start as a single super-atom of unimaginable energy content, that exploded a couple of billions of years ago—and is still exploding. All the energies of which we are aware, from the bursting brilliance of giant stars that far outshine our sun down to the feeblest kicks of a dying protozoon, are but the varied expressions of that vast primal explosion, if this hypothesis holds good.

The idea started with the notion of an expanding universe. Light from remote stars and galaxies, caught in astronomers' instruments, is redder than it theoretically should be. One explanation of this so-called red shift is that all parts of the visible starry universe are rushing away from each other at terrific speeds—much faster than the pieces of an exploding bomb.

About 15 years ago a young Belgian priest-scientist, the Abbé Georges Lemaitre, boldly suggested a backward extension of this expanding or exploding universe. Mathematical calculations carried him back to a beginning-point where neither time nor space existed, and all the matter that eventually came to constitute all the stars and planets was present only potentially, as terrifically high-level energy in one single cosmic atom.

Chemical elements as we know them are discussed in terms of their atomic weights and atomic numbers, which are expressions of the number of electrons spinning around the sunlike nucleus or atomic heart. Since the number of electrons in the smallest pinpoint of ordinary matter—a single dust-grain, for example—must be reckoned in trillions, the atomic number of this primordial atom

is simply unimaginable. We have to call it infinity and let it go at that.

What the first atomic explosion was like is also something that defies human imagination. What set it off is doubtless forever beyond our guessing. Theoretical considerations have led the Abbé Lemaitre to a tentative conclusion that it must have occurred something like two billion years ago. Analysis of uranium-containing rocks from the earth's oldest known geological formations are of about that age, by other, independent methods of analysis and calculation. This would seem to require more time than the Lemaitre hypothesis allows; but it has been suggested that perhaps in the beginning the evolution of cosmic materials went on at a much more rapid rate, and that by the time the processes we know as geology could begin events could be ticked off by a slower clock.

If these dizzying ideas are valid, our most terrifying "city-buster" bombs are made of mere pinches of debris from the universe's first enormous outburst, scraped up out of overlooked corners like a winter's last snowballs.

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NUTRITION

Saccharin Harmless as Ordinarily Used

► IS IT safe to use saccharin instead of sugar for sweetening tea, coffee, lemonade and some desserts? Since the sugar shortage is expected to continue, many are probably wondering about this and many may have found it difficult to get any specific information on the subject.

The reason for the vagueness is that apparently only a few studies of saccharin's effect on the body have been made. About 30 years ago the Secretary of Agriculture asked a referee board of consulting scientific experts in the Department of Agriculture to look into the matter. This board reported that in small quantities saccharin was not injurious to normal healthy grown persons so far as could be determined by methods then available for the study. The quantity they stated to be harmless was about three-tenths of a gram per day. This



ATOMIC PARTICLE — According to the Lemaitre hypothesis, the entire universe, of which this galaxy or spiral nebula is a very small part, all started out compressed in a single cosmic atom that 2,000,000,000 years ago started the explosion that is still going on.

would be about four and one-half grains.

More than this and especially amounts over one gram, or about 15½ grains, taken daily for months might bring on serious digestive disturbances, the board reported.

Saccharin has long been used as a sugar substitute by diabetics and patients with other illnesses. This has usually been on medical advice and probably with the amounts to be used specified by the patient's physician.

Home economists of the Department of Agriculture advise against the use of saccharin as a sugar substitute in cooking and particularly in canning because such use is likely to give the foods a bitter flavor.

In 1937 Dr. W. W. Bauer, director of the bureau of health education of the American Medical Association, answered a question about possible injurious effects of saccharin by stating that it "is quite harmless in the amount ordinarily used."

The substance is a coal-tar product which was discovered accidentally in the course of investigations by two American chemists, Ira Remsen and C. Fahlberg, at the Johns Hopkins University. It is from 300 to 500 times as sweet as sugar.

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GEOGRAPHY

China's Assets

She has sufficient natural resources and population to prevent future Japanese encroachments, if necessary national developments are carried out.

► CHINA, where the possibilities of civil war now seem abated through agreement between the Chungking government and the communists of the North, has sufficient area, natural resources and population to prevent Japanese aggression in the future if necessary national developments are carried out.

These include a united government under a new constitution giving the common people some say in governmental affairs, greatly expanded and improved educational opportunities in both general and technical education, a wide-spread effective public health program, the establishment of industries to use China's natural resources, and an extensive program in land management and use.

China also needs a navy; the nucleus of which could well be the remnants of the Japanese and German war fleets, which those two nations will not be permitted to retain.

China has, in Asia, a somewhat similar position and similar possibilities to those of the United States in North America. It has, of course, only one sea-coast. This is perhaps a handicap, but its area is one-third greater than that of the United States, and it has over three times as many people. Like the United States, it extends from a semi-tropical South to a bleak and cold North, from a rainy coastal area to an arid plateau and mountainous interior, and from interior fertile plains suitable for grain and other foods to mountain slopes adapted for grazing and timber. It has great known mineral deposits that are only partially developed, and undoubtedly many more as yet undiscovered.

Mountains occupy 30% of China's area, high plateaus 34%, hilly regions 9%, basins 16%, and alluvial plains 10%. It has almost every type of known topography. Three large navigable rivers drain the three natural divisions of the country; the Yellow in north China, the Yangtze in central China, and the West, or Pearl river, that empties into the South China sea near Hongkong.

Communication and transportation are two of China's great needs to make it a great nation in world affairs. Telephones

were relatively rare in prewar days, in contrast with some 20,000,000 in the United States. Telegraph mileage was also very low and very few families could afford to have radio receiving sets to get the programs from about 50 broadcasting stations. In the United States there were 750 stations and over 40,000,000 receiving sets.

In 1931, China had less than 7,000 miles of railroad. Some additional mileage was built in the next few years, but the Chinese-Japanese war which started over eight years ago prevented putting into operation an extensive railway-building program sponsored by the government. In America at the same time there were 248,000 miles of railroad.

At the beginning of the Japanese war on China, the highways in China totalled some 67,000 miles, less than one-fourth of which were surfaced, the rest being earth roads. The United States has nearly 3,000,000 miles of highways, nearly half of which are classified as improved.

China now produces practically every food and commercial crop that is grown in the United States, and in addition tea, certain medicinal plants, insecticides, and other important products. Rice is the principal food crop raised for home consumption, but normally the wheat crop is half as great. Soybeans, and other beans, are important crops as well as barley, oats, corn, millet, peas, potatoes and sugar. For vegetable oils, sesame, rape, flaxseed and other plants are grown. For fiber, cotton, flax, hemp, ramie, wool and silk are produced.

Although China has much excellent and other usable grazing land, its cattle industry is low in comparison to that of America. Chinese are not heavy meat-eaters, particularly among the common folk, probably for economic reasons. However, China has normally some 20,000,000 head of cattle, millions of sheep, swine and goats, and a large number of buffalo, the latter used principally as beasts of burden. Its meat and dairy industries could be greatly increased.

Coal topped China's mineral production before the war, with limestone and iron ore second and third. In America, China is thought of principally as a

source of tungsten, tin, antimony, mercury, manganese, bismuth and molybdenum. It mines, however, considerable gold, silver, zinc, asbestos, sulfur, and arsenic ore. Many other metallic and non-metallic minerals are also produced. Coal reserves in China are estimated to contain over 240,000,000,000 tons.

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ASTRONOMY

Nova Bursts Forth In Constellation Aquila

► A GREAT stellar catastrophe has produced a nova or new star in the constellation of Aquila, the Eagle, now visible high in the southwest. Of the seventh magnitude, the nova is just too faint to be visible with the naked eye.

The nova was discovered by Nils Tamm of the Kvistaberg Private Observatory in Bro, Sweden, who already has to his credit the discovery of two other novae in this same constellation. News of the discovery was rushed by Prof. Bertil Lindblad of the Stockholm Observatory to Prof. Elis Stroemgren of Copenhagen University Observatory, world astronomical information bureau, who cabled Harvard College Observatory, clearing house for astronomical news in the Western hemisphere.

This nova, which until a few days ago appeared as a faint star on photographs, had already passed its maximum brilliance when discovered on Aug. 26. A study of the star's spectrum shows that this new star, which may have flared into a sixth magnitude star, is getting fainter.

About a hundred novae, stars which flash to sudden brilliance and then usually fade to insignificance, have already been discovered in the Milky Way. Several plates made at the Harvard College Observatory confirm the discovery of this bright star, which at present is a great deal hotter than our sun.

When found, the star had a right ascension of 19 hours, 16 minutes, and a declination of plus zero degrees, 35 minutes. Observatories throughout the world are being notified of this gigantic stellar outburst.

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All plants and animals living in the sea that have been analyzed contain iodine.

Trees planted next to street lights are likely to hold their leaves longer in autumn and be tardy in budding out in the spring.

GEOGRAPHY

Koreans Pleased

They like the prospect of having their country occupied by American forces, for they look to us for independence. Japs prefer it to Soviet domination.

► THE SOUTHERN half of Korea is to be occupied by American forces, it is reported. This will please the Koreans, who look to America for independence and who have forgiven the United States for the small part it played in the 1905 Treaty of Portsmouth (N. H.) which gave Japan a protectorate over Korea and resulted in its complete involuntary absorption into the Nipponese empire five years later.

Perhaps it will please the Japs also, who prefer American occupation of Korea to Soviet occupation. Korea, called Chosen by the Japs, was the principal bone of contention in the Russo-Japanese war that resulted in the treaty. Russia wanted control of Korea as a protection for Port Arthur on the Manchurian coast, which she had leased from China, and for Vladivostok, Siberia, on the

Japan sea coast. To Japan, Korea under any control except Japanese was "a dagger pointed at its heart."

The loss of the Korean peninsula to the Nipponese empire is one of the most severe land losses of the war. Korea was its foothold on the mainland of Asia, and the road that led to Manchuria and China. Korea was needed also, the Japanese felt, for its coal and other minerals, for its agricultural resources, and for a place of resettlement of the overflowing Nipponese population. For 40 years Japanese overlords and settlers have exploited the native Koreans, their land and their mineral resources, and thwarted their education, their religion and their social and economic development.

Japan's desire to own Korea is not a late 19th century development. Three

centuries earlier she tried to gain a foothold on the Asiatic mainland by the Korean route, and waged a seven-year war against Korea. This ended in 1599 unsuccessfully, largely because of the famous ironclad "turtle" ship, invented and developed by a Korean admiral in 1592. Against it the Japanese navy and transports found themselves helpless.

This oar-propelled ironclad vessel, probably the first in history, was 120 feet long and 30 feet wide, with its sides and top covered with iron plates. It took its name from the general appearances of its top, and from its turtle-headed prow used for ramming purposes. Port-holes on all sides permitted the shooting of fire-arrows at an enemy, and also the use of cannon and crude bombs, it is claimed.

Korea, a little larger than Kansas in area and resembling the Florida peninsula in shape, lies between the Sea of Japan and the Yellow sea. Its southern extremity is about 120 miles across the water from southwest Honshu and Kyushu. Its prewar population was approximately 23,000,000. It is a mountainous country with fertile valleys and excellent grazing lands, and has a coastline of some 6,000 miles on which there are many excellent ice-free harbors and near which are some 200 inhabited islands. The Koreans resemble the Japanese in appearance, but there the similarity stops.

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CHEMISTRY

Durable, Hard Enamel For Household Equipment

► MORE durable and slightly finishes for household refrigerators, stoves and other equipment is promised with new synthetic, exceptionally hard, stainproof enamels developed by the Arco Company and already in production. They will be known as synox finishes.

One type of the new enamel is designed for such articles as refrigerators, stoves, ironers and electric mixers, and another for dishwashers and washing machines. Laboratory and practical tests show that they have an unusual degree of water and alkali resistance, it is claimed, also resistance to stains and change of color.

The new material has been successfully applied to clean steel, with or without primer, and to aluminum and magnesium. Despite its hardness, synox has a flexibility which is more than ample to meet all service conditions.

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ENEMY SPOTTED!—The three operators seated on the mount of this Radio Set SCR-268 see indications of the airplane echo on cathode ray oscilloscopes. One operator tracks the aircraft in azimuth, another tracks in elevation, and the third measures the range. "Mickey Mouse" is the name given to the type of radar set shown on the front cover of this *SCIENCE NEWS LETTER* which stood guard against the Luftwaffe near San Pietro, Italy. Official Signal Corps photographs.

CHEMISTRY

Fungus-Proof Fabric Is Promising Development

► A MODIFIED cotton cloth, that failed to rot during six months buried under soil where ordinary cotton would rot in a week, has been developed in the Southern Regional Research Laboratory of the U. S. Department of Agriculture. It is a partially acetylated cotton, which is somewhat related to rayon made by the acetate process.

The new material has the strength and appearance of ordinary cotton, but it has the ability to resist the attack of rot-producing microorganisms and to resist mildew. In contrast with many preservative finishes on cotton, the treatment does not produce discoloration. The treated fabric is odorless and is not sticky. It can be used in food sacks because the fabric is not poisonous.

To test the rot resistance of the material some of the treated cloth and thread were buried in the ground and in especially prepared beds teeming with microorganisms of the kind that would have rotted ordinary cotton within a week. After six months they had lost very little strength. Sandbags made of acetylated cloth, sewed with similarly treated thread, and piled outdoors on the ground, were still intact after two years.

This modified cotton should be satisfactory for making clothing that will not mildew, tents and awnings that will not rot in damp climates, and fish nets that can be stored wet. It is also promising for use in making bags for fruits and vegetables.

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CHEMISTRY

Natural and Synthetic Rubbers May Be Combined

► WAR experience in the making and field use of tires can be expected to have considerable influence on the design and construction of tires for postwar cars, Dr. Waldo Semon, director of pioneering research for the B. F. Goodrich Company, stated in a radio address.

Confronted with an enemy-caused famine in natural rubber, scientists and manufacturers in the United States cooperated in doing the impossible, and filled the gap largely with synthetic rubber, mass-produced in this country for the first time. The speaker declared that while war-time tires of synthetic rubber may not be fully a match for the best

prewar natural-rubber tires, "a synthetic tire that is more than a match for prewar naturals may be 'just around the corner.'"

War-pressured speed-up in research has taught us many things about better tire design as well as improvement in basic materials, Dr. Semon stated, just as the spur of war has caused many very rapid advances in many other fields of applied science.

However, the speaker cautioned, "I would like to refute the rather common assumption that war speeds up technical progress. It's a big subject and could stand a lot of arguing, but I have long regarded as one of the world's most tragic fallacies the notion that war adds to the stockpile of fundamental knowledge. It is true that some spectacular advances in science are brought out under the spur of war, but in the long run war depletes rather than adds to the sum of fundamental knowledge. And for the most part the hard, digging research behind even those spectacular wartime advances was carried on during the years of peace."

Dr. Semon spoke as the guest of Science Service on the CBS program, "Adventures in Science."

Science News Letter, September 8, 1945

ENGINEERING

Electricity and Gas Used In Under-Water Cutting

► A NEW method of under-water cutting of steel plates on sunken vessels, using electricity and gas in combination, has been developed in Moscow by Dr. K. Khrenov, who is responsible for many under-water cutting techniques that have been successfully used in the removal of collapsed bridges and ships from Russian river bottoms. In his method a stream of hydrogen is sent into the cutting electric arc, resulting in a considerable saving of electricity.

Dr. Khrenov suggested using electric-arc welding under water 13 years ago, when he found that the arc is protected by gas bubbles formed. The arc is protected in much the same way that the flame in a lamp is protected from air currents by the glass chimney. Arc welding and cutting under water are common practices throughout the world.

In his experimental work in his laboratory, Dr. Khrenov uses a large steel tank filled with water, with electric lights on its sides and bottom. It is large enough for a man in a diver's suit to work on large plates under the surface.

Science News Letter, September 8, 1945

IN SCIENCE

METEOROLOGY-ELECTRONICS

Radar-Equipped Aircraft For Weather Forecasting

► RADAR may serve an important meteorological function, now that the wars are over, in assisting the U. S. Weather Bureau in weather forecasting, a job that it performed satisfactorily during the past months in the Pacific area. The Air Technical Service Command has released information about the radar reconnaissance aircraft that gave home stations prompt and accurate pre-flight weather information in areas where bombing flights were scheduled.

A 450-pound piece of radar equipment, developed at Wright Field and originally used for blind flying, was adjusted to provide the meteorological information as well as navigation data. With his set trained on the air around him instead of on landmarks below, the radar operator, by pushing a switch marked "weather" gets a picture of advance cloud formations on a special detecting screen. Tracking clouds instead of a target, the screen will indicate approaching storms at distances of from 100 to 200 miles.

These weather observation planes reported information back to their bases every half hour, and from the bases it was relayed to bombers and fighters flying near the storm area.

Ground search radars have also been adapted to provide meteorological data, and were also successfully used in the Pacific.

Science News Letter, September 8, 1945

CHEMISTRY

New Plastic Upholstery Does Not Burn Easily

► A FIRE-resistant, plastic-coated upholstery fabric, which is expected to be used in boats, restaurant seats and office furniture has been developed at the du Pont coated fabrics laboratory at Fairfield, Conn.

Created for use in aircraft, tanks and ships, the fabric consists of a flameproofed cotton cloth base with a flexible fire-resistant surface coating of synthetic resin. The pliable material will char in contact with a flame, but will not continue to burn when the flame is withdrawn.

Science News Letter, September 8, 1945

NE FIELDS

GENERAL SCIENCE

Latin American Students Receive U. S. Scholarships

► CHEMISTRY or related fields has been chosen by 19 of the 216 Latin American students awarded scholarships for on-the-job training in the United States under the auspices of the Office of Inter-American Affairs. Ten have already completed their studies.

Three of the students now in training are from Brazil, two from Uruguay and one each from Argentina, Chile, Mexico and Paraguay.

They are located as follows: Alberto Lagomarsino, Argentina, pharmaceuticals, Merck & Co., Rahway, N. J., and Vick Chemical Co., New York. Wilson F. Falcao, Brazil, plastics, International General Electric Co., Inc., Pittsfield, Mass. Walter de Oliveira, Brazil, industrial chemistry, United States Corporation, Clewiston, Fla., and U. S. Industrial Chemicals, Inc., New Orleans. Luis Telles, Brazil, chemical products, Lehn and Fink Products Corp., Bloomfield, N. J. Luis Garcia, Chile, plastics, Waterbury Companies, Inc., Waterbury, Conn. Virginio Olmedo, Paraguay, clinical chemistry and bacteriology, Arlington County Hospital, Arlington, Va. Enrique Orvananos, Mexico, industrial chemistry, Reynolds Metals Company, Richmond, Va. Agustin Etcheverry, Uruguay, dyestuffs, E. I. DuPont de Nemours & Co., Inc., Wilmington, Del.; and Hugo Garrido, Uruguay, industrial chemistry, Paragon Packing Company, Astoria, Oreg.

Science News Letter, September 8, 1945

PSYCHOLOGY

Idiot Has Unusual Power to Visualize

► HOW a 29-year-old "idiot," whom tests indicate has a mental age of a year and a half, is able to do the surprising feat of naming the day of the week on which any date fell within the last 30 years was investigated by A. Dudley Roberts of Lapeer State Home and Training School, Lapeer, Mich.

It is not because of any extraordinary mathematical ability, but because of his unusual talent for visualizing something that he has once looked at for a long time, Mr. Roberts reported in the *Journal*

of *Genetic Psychology*. He is apparently able to "see" every page of the calendar no matter how many months since the leaf was torn off.

Although spastic paralysis makes him unable to do many things that babies of a year and a half can do, which may account for his low "mental age," his mind in many ways has developed to a level found among children from six to nine years of age. Unable to walk or talk, he answered questions by nodding or shaking his head. His vocabulary, ability to remember numbers and to handle simple arithmetic problems was found equal to that of children in the first or second grade.

The patient is reluctant to give away the secret of his special ability, but a clue was obtained from the fact that he not only could tell that Nov. 27, 1930, was on a Thursday, but that it was printed in red on the calendar.

To test the theory this suggested, a calendar was prepared for 1945, with which year he was not already familiar, using three colors, the various colors being given to the dates at random. Two days later, after correctly giving the week-day, he seemed startled when asked the color of the number. Yet in practically all 12 dates chosen, he not only gave the day of the week, but told whether it was printed in red, blue or black.

Science News Letter, September 8, 1945

PHYSICS

Dreams About Atomic Power Are Due for Revision

► DREAMS of the romanticists that atomic power has abolished work and responsibility are due for drastic revision.

In dealing with atomic forces, we are not playing with tame power plants of toy dimensions. The atomic reaction will not begin until amounts of matter measured in pounds and tons are brought together.

Once brought together, these fantastically dangerous materials are watched by automatic mechanical guardians and controlled by scientists at distant stations.

Momentary warnings give the signal for split-second adjustments, within ranges measured in centimeters, which mark the difference between orderly power production and such utter annihilation as is caused by the bomb itself.

A plant like this is nothing to carry around in your watch-case.

Science News Letter, September 8, 1945

METALLURGY

Super-Cutting Metal Alloy Used No Tungsten

► A SUPER-cutting metallic alloy which contains no tungsten was developed in German for war purposes, it is now revealed. The new cutting material consists essentially of vanadium and titanium carbides bonded with metallic nickel.

Information relative to the new material is given in an article prepared by Prof. Gregory Comstock of the Stevens Institute of Technology. It is released for publication by the War Production Board and will soon appear in several technical journals. Prof. Comstock, who is director of the Institute's powder metallurgy laboratory, went to Germany before V-E day, and followed the Army in its advances into the Reich. His job was an investigator for the government-sponsored Technical and Industrial Intelligence Committee to study German scientific and technological developments during the war.

Prof. Comstock was able to secure data covering the amount of the new alloy made in Germany and Austria. One of its principal values to the Germans was that it freed their limited supply of tungsten for other uses. No tungsten is produced in Germany, and Hitler's war machine depended for this essential metal in modern steels upon importations, principally from Spain and Portugal.

Science News Letter, September 8, 1945

NUTRITION

Earthworms Contain High Quality Protein

► IF WE hear, presently, of Mr. Watahiro going out into his Honshu garden to eat worms, it won't be entirely because nobody loves him. More likely it'll be because he's hungry.

Prof. Sidney S. Negus of the Medical College of Virginia, calls attention to two almost-overlooked bits of research on the possibility of common earthworms supplying protein in a pinch. First, two Japanese scientists called attention to the high quality of the proteins found in these squirming little animals. Then a pair of English chemists killed some worms, split them, washed out the dirt, dried the remains to original moisture content, and analyzed them. They found that 12% of the earthworm body is "meat."

Science News Letter, September 8, 1945

METEOROLOGY-PHYSIOLOGY

Maps for Human Comfort

Clothing almanacs will show requirements for all the world. Travelers will know whether to take summer cottons or fur coats.

By MARTHA G. MORROW

► CLOTHING almanacs may help peacetime travelers decide whether to take summer cottons and thin underwear, a fur coat and lots of red flannels, or a raincoat and overshoes, when voyaging to far-away lands.

Such an almanac, prepared by the Office of the Quartermaster General, shows at a glance the standard items of combat clothing needed month by month to protect the soldier from his environment. Listing both what is optional and what is absolutely necessary, clothing maps for all parts of the world have been prepared on the basis of the climate of these regions.

Maps in the past have been designed to show the elevation of a region, its rainfall, the distribution of agricultural products such as wheat or cotton, the regions where sheep or cattle are raised, and many other specific things. Not until this war, however, have maps been designed to be analyzed from the point of view of human comfort.

The average temperature for each month is shown for all parts of the world on these maps so that anyone can tell at a glance about how hot the region will be during June or October, and whether it is likely to be dry, humid or wet.

Vacation Zones

The climate zone which might be considered to include good regions to spend a vacation—this will particularly interest those of you who didn't get away this summer—are those where the temperature as a rule ranges from 50 to 68 degrees Fahrenheit. In January, this vacation climate in the United States lies around Florida and southern California. In May this zone has moved northward and spread over most of the United States. In August, when most of us are unpleasantly hot, it has gone into Maine and Canada. By October most of the country is again within this zone of ideal climate, which moves back to Florida by December.

The weather of much of coastal southern California is unique for the United States. Here are probably the only places

in the country where the temperature throughout the whole year averages from 50 to 68 degrees. In only a few other places in the world, such as in tropical mountains like Mexico City or in northern New Zealand, is there a similar range of temperature variation.

Various colors and shades are used on these maps for each drop of 18 degrees Fahrenheit, ranging from regions where it is extremely hot to those where it is ultra cold. Dry-looking colors such as tan, yellow and gray are used on these colorful maps to mark regions where there is little precipitation. Humid regions such as those in which most of us prefer to live are shown by softer, greener colors. These same shades are dotted to indicate really wet regions, where more rain falls than can easily be evaporated into the surrounding air.

The warmer the air, the more moisture it will evaporate. Thus in making the maps, not only the average rainfall for that month, but also the temperature must be considered. If the average temperature is 86 degrees or over, the region is classed as humid when about 2.6 to 8.9 inches of rain falls a month. But when this same amount of rain falls in a region where the temperature stays around 14 to 32 degrees, the section is classed as wet.

Some maps show all on one sheet the climate for a particular place for each of the 12 months. A circle is divided into 12 segments to represent the months, while colors show the likely temperature and moisture for each month.

Northeastern continental Asia has a greater range in temperature than any other section of the world. During the warmest month the temperature averages as high as 86 degrees. In the coldest winter month the temperature averages 60 degrees below zero, sometimes going as low as 90 degrees below.



TEMPERATURE VARIATIONS—This map, being worked on at the Office of the Quartermaster General and photographed by Fremont Davis, Science Service staff photographer, shows the temperature variation of all parts of the world.



CLIMATE CHART—Maps have been designed to show the climate of important cities month by month. Circles, divided into 12 segments to represent the months, are colored to show the likely temperature and moisture during each month.

Japan, which extends almost as far north and south as the United States, has a variety of climates. The northern island of Hokkaido has about the same weather as Newfoundland. Honshu and the islands farther south enjoy a temperature similar to that of Washington, D. C., but the rainfall is higher in Japan. Except for having to be prepared for more frequent rains, pretty much the same clothing would be needed month by month in Tokyo as in Washington.

The climate of Europe on the whole is mild and equable. In winter western Europe ranges from 32 to 50 degrees Fahrenheit, and from 50 to 68 in summer. Whereas in the United States people wishing to go to a colder climate would travel northward into Canada, in Europe they would not go toward the north but east, moving from England into Germany and Russia. Edinburgh is usually about as warm in January as the Riviera.

France and western Germany have about the same temperature as northern California, Oregon and Washington. Temperate coasts on the eastern side of continents, as represented by Savannah, Ga., or Shanghai, generally experience more severe temperatures than west temperate coasts.

Climate maps make it possible to look at any place for a particular month and compare that climate with the kind of climate with which you are already fa-

miliar, probably found right here in the United States.

The two worst climates in which to live are the hot humid and wet cold. This is because of the problem of moisture evaporation. In order to remain comfortable you must lose as much heat as you produce. Evaporation, which is your principal avenue of heat lost during hot weather, is reduced to a minimum in a hot, humid climate such as one finds in the jungle. In a wet cold climate, such as one finds in the Aleutians, too much body heat is used up in evaporating the moisture from your wet clothing, leaving you cold and clammy. When it gets really cold, however, moisture is "frozen out" of the air.

The easiest climate to live in, irrespective of whether it is dry, humid or wet, is that where the temperature averages between 50 and 68 degrees. This is the average temperature at which we try to keep our houses and that to which we most easily adjust ourselves. We may prefer our houses warmer in the day, but we want them cooler at night. The average temperature of day and night is a good index of the degree of comfort in a house or in a climate zone.

Weather is the atmospheric condition which you experience at any one time. Weather averaged over a long time is climate. Thus the amount of clothing

Recent REINHOLD Books

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Do You Know?

Liquid oxygen is attracted by a magnet.

Much long-fibered *asbestos* comes from Rhodesia.

Garden *mulches* do not add to the soil but they do hold for crop use the moisture already there or added later by rain.

The *oyster* is equalled or excelled only by liver in the amounts of iron and copper that it furnishes in an average serving at a meal.

Chemical treatment of *dirt roads* with a small quantity of resinous material makes the earth water-repellent and keeps the road dry.

The familiar moth repellent, *naphthalene*, when oxidized and combined with methyl alcohol forms dimethyl phthalate, a valuable insect repellent odorless to humans but obnoxious to mosquitoes and other pests.



Microphotometer Speeds Metallurgical Analyses

Routine analysis in a lab which receives daily about 500 samples of non-ferrous alloys, has been greatly speeded up by the use of spectrographic methods, with a Knorr-Albers Microphotometer to measure and record the line densities of spectrograms prepared with other equipment. The user finds that the speed and economy of the Microphotometer method "couldn't be approached by wet chemical methods" and that accuracy is equal to or better than the best chemical analysis. For details of the Microphotometer, see Cat. E-90 (1).

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needed for our soldiers or which we will want when Americans can once again satisfy their love of travel is based on the average temperature or climate of a region.

The amount of dry clothing you need depends on the amount of heat you are producing and the temperature of the air at which the heat is lost. Thus the air temperature can be used in determining the clothing which a soldier should have for walking or doing some light exercise. The amount of clothing needed is determined by its thickness—it is bulk and not weight that keeps you warm. If the clothing is dry, its value can be measured by its thickness.

A layer of clothing a quarter-inch thick, or about the thickness of a man's suit, has been taken as the basic standard layer of clothing in working out the clothing almanac. This is the amount of clothing you would probably need when the temperature is around 68 degrees Fahrenheit, if not exercising. For each cooler climate zone you need one extra layer of equal thickness.

The climate zone classification has been used for other types of maps than those showing clothing needs. One example is the mapping of insect-borne diseases according to climate. Malaria breeds at temperatures above 59 degrees Fahrenheit, which is mid-temperature of the mild climate zone. Outbreaks of malaria have been known to occur in Siberia, but only when the average temperature reaches the critical point of 59 degrees.

The amount of fuel needed to keep warm in New York is about the same as in London, though winters in the British capital are much warmer, it is shown in fuel requirement maps made by the climatology section of the quartermaster corps. Areas which have cool summer, spring and autumn weather, such as England, may require more fuel than those having cold winters but warm spring and fall seasons.

During the fall months, a man shipwrecked without drinking water may expect to survive at sea three or four days longer toward the north than near the equator where he can count on living only six or seven days. This is brought out in maps showing water requirements and survival times without water for oceans and deserts. These maps have been used to chart the need of rescue equipment.

In some sections of Arabia and India, a man can survive only one day in the desert without water. Here in the United

States in the deserts of California and Arizona, he can probably live at least two days without liquid. Maps showing the expected time of survival at sea and in deserts for men without water were based largely on the precipitation of the region, and on field tests to determine water requirements.

These are just a few of the special maps based upon those showing the climate of various sections of the world. The maps were the idea of Maj. Paul A. Siple of the Climatology section of the office of the Quartermaster General, of Dr. Samuel Van Valkenburg, now with Clark University and expert consultant for the section, and of Maj. Weldon Heald, noted mountaineer and also climatology consultant.

Science News Letter, September 8, 1945

INVENTION

Solar Water Still for Desert Dwellers

► PERSONS whose jobs require them to live in desert regions where the only available water is alkali or salt are offered a way to distill fresh water out of it with no fuel other than sunlight, in the invention on which patent 2,383,234 has been granted to W. S. Barnes of Tucson, Ariz.

The unpotable water is held in a long tank, preferably oriented with its long axis on an east-west line. This is covered with a gabled glass roof, or a sawtooth series of such roofs, with a sprinkler-pipe running along the ridgepole. Daytime heat evaporates part of the water, and cooling sprays over the outside of the glass condense the vapor on the inside, where it trickles down into appropriately placed troughs and pipelines. Incidentally, the glass roof is hopefully provided with gutters and spouts, to catch such occasional rains as do fall in almost all deserts.

Science News Letter, September 8, 1945

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ENTOMOLOGY

NATURE RAMBLINGS

by Frank Thone



DDT: After-Effects

➤ DDT, the new insecticide, available for civilian use now, is likely to prove discouraging not only to the insects themselves but to certain industries and businesses that produce and distribute insect-killing appliances used up to now.

It won't bother the insecticidal spray and dust manufacturers much. They'll simply modify their formulas to include DDT, but continue to include some of the old standby materials like pyrethrum, which is quicker-acting than DDT, even if not so certain a killer. Neither will window-screens pass out of use: better tactics, entomologists suggest, will be to put up screens as usual, then spray them with DDT, which will make death-traps of them for weeks or months.

There won't be so much business for the old reliable fly-swatter. For one thing, there won't be so many flies to swat. Besides, what will be the use of following a fly about the house to swat it, when you know that it only has to alight once on the DDT-sprayed wall or ceiling to pick up sure doom on its feet?

Sticky fly paper, however, faces a dubious future. The gluey sheets on window-sills and table, and spirals dangling from the ceiling, have never been nice to look at, anyway—not to mention the chances of the cat sitting on one of the sticky sheets, or a tall girl getting one of the spirals stuck in her hair. Even less likely to survive are the various types of fly poison, to which flies had to be lured with Borgia banquets of sugar-water or the like. Henceforth flies won't need to seek death in a saucer—it will be waiting for them in any spot where they stop to rest their wings.

Another industry founded on fly-kill-

ing, newer than these, that may be adversely affected by the general distribution of DDT is the manufacture of electrically-charged flytraps. Up to now, they have been just about the deadliest contrivances a fly could approach, for the slightest contact of feet or wings with their highly-charged grids is signalled by a miniature lightning-flash marking the end of one fly. They still have the considerable advantage of greater neatness, for the dead insects drop into a tray underneath, and are thus automatically collected as well as killed. Nevertheless,

because DDT spraying will be so cheap, and can make such large areas deadly to flies at little expense, its competition is certain to be acutely felt here as well as in the older fly-killing fields.

Science News Letter, September 8, 1945

Egg shells are porous enough to allow fresh air to enter and used air to exit.

Thymol is one of the ingredients in a formula for a mold-preventive for book-bindings; included also are mercuric chloride, ether and benzene.



Black and white half-tone reproduction showing the prominent lines of the spectra of pure metallic elements, which identify them to the spectrographer.

How to Find Gold... At the Rainbow's End



This is the instrument that proved the old tale about the pot of gold at the end of the rainbow. This is a modern Bausch & Lomb Spectrograph. To probe the secret of the universe it makes use of the same principles of light that cause the rainbow.

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elements of which the sample is composed even though the amount may be as small as one part in 100,000,000. Much of today's research in metals, foods, and chemical compounds depends on this optical instrument. Bausch & Lomb Optical Co., Rochester 2, N. Y.

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CHEMISTRY

Hemp Needs New Uses

War-born American industry is looking for industries, other than cordage, to use its products. Rug warp, fire hose, canvas, toweling, tropical clothing suggested.

➤ AMERICA'S war-born hemp industry will require new uses for its products if some 42 processing mills built by the government are to continue in operation. These plants were constructed, and domestic hemp-growing encouraged, to meet a shortage of rope and cordage due to the Japanese control of Manila hemp from the Philippines and elsewhere in the Far East.

"Clothing and textiles from hemp offer one means of nourishing a 'war baby'

into a young industry important in national defense," declares *Industrial and Engineering Chemistry*. It states also that government retention of these hemp processing plants and expansion of the domestic hemp industry are being urged by some in the interest of national preparedness.

"To utilize these plants at anything near capacity, new industries for hemp, other than cordage, will be needed," the publication says. "Commercial development of hemp for clothing and textiles in this country has attractive possibilities, since hemp is both the longest and the most highly absorbent natural fiber known."

Among other uses for hemp suggested are use in rug warp, fire hose, canvas, toweling, tropical clothing, by-product paper, and home insulation.

Since the Far Eastern supply of cordage was cut off by the war, American farmers, in Iowa, Illinois, Indiana, Wisconsin and Minnesota particularly, were urged to increase their acreage of hemp. They did so, jumping a prewar average of 14,000 acres up to 165,000 acres. With the liberation of the Philippines the mills are being closed.

Hemp is a tall plant, related to the mulberry tree. It produces the strongest known vegetable fiber. It was used in both World Wars to supplement stocks of the hard fibers, jute, sisal, and Manila.

Although hemp is the strongest fiber known, its qualities as a soft spinning thread make it more suitable for textile, rug, and specialty uses, the article states, than for rope and cordage where the cheaper hard materials are predominant.

Science News Letter, September 8, 1945

CHEMISTRY

Wax Emulsion Makes Clothing Water-Resistant

➤ EVERYBODY will be able to have water-resistant clothing, as soon as a new war-born emulsion, used in large quantities in the armed services, becomes available in civilian markets. Expert treatment of the clothing will be unnecessary; the emulsion is applied sim-

ply by adding it to the rinse water in the family wash.

The emulsion can be applied to many types of fabrics as well as to clothing, such as awnings, tenting, window shades and drapes. It makes the material not only water-resistant but less liable to wrinkle and to spot. Pressed garments will keep their shape longer.

This milky-looking wax emulsion, a petroleum product of the Socony-Vacuum Company, is non-toxic and non-inflammable. It is made up of tiny particles of paraffin wax suspended in a solution of an aluminum salt and water. It is superior to former wax emulsions in which soap is used to emulsify the wax, it is claimed, because such solutions deposit both a soap film and the wax on the cloth.

In laundering, the wax emulsion can be used in conjunction with starch, and it can be used also with mothproofing and mildew-proofing processes if desired. However used, the wax is invisible on the clothing, does not make the material stiff, and does not fill the spaces between fibers. Clothing that has been treated retains its porous qualities, and summer clothing, therefore, remains ventilated and cool.

Science News Letter, September 8, 1945

WILDLIFE

Restrictions on Shooting Pigeons as Source of Meat

➤ GETTING free meat by shooting pigeons of the ownerless flocks that infest most cities, an idea that has suggested itself to more than one red-point-lacking citizen lately, is not as simple as it seems at first thought, the U. S. Fish and Wildlife Service warns. In most municipalities there are rather sharp restrictions on the use of firearms within

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city limits. However, police permission can often be obtained on the plea that the birds are a pest.

Ordinary 12- and 16-gage shotguns are too heavy weapons for killing pigeons, especially at short range. The Fish and Wildlife Service recommends the .410-caliber shotgun, or even a .22-caliber rifle with shot cartridges. A high-powered air rifle can also be used effectively.

Trapping is practicable in some sites and where it can be carried on is preferable to shooting. It at least has the advantage of enabling one to release, unharmed, stray carrier or fancy pigeons that have wandered into dubious society and been adopted as flock-mates by their "hobohemian" companions. Initialed and numbered leg bands usually identify these valued strays.

Getting rid of pigeons as pests, with no idea of using them for food, can also be done by using poison; but this carries with it the risk of having the dead birds picked up and eaten by somebody's pet cat or dog, which will be poisoned in its turn. Poison gas has been suggested, but is not practicable except in the hands of professionals. It is too risky to be attempted by amateurs.

Pigeons can be excluded from belfries, church steeples and other favored nesting sites by nailing chicken-wire inside all openings. If the one-inch mesh is used, it will keep out starlings as well as pigeons.

Science News Letter, September 8, 1945

BIOCHEMISTRY

Mold from Human Hair Stops Typhoid Germs

▶ A "RED-HEADED" mold from human hair may yield a penicillin-like remedy for typhoid fever and some kinds of dysentery. Discovery that a red dye or pigment produced by the mold stops the growth of typhoid and dysentery germs in culture plates, as penicillin stops the growth of other germs, is announced by Dr. L. Rosenthal, of Israel Zion Hospital, Brooklyn, N. Y. (*Science*, Aug. 17)

Penicillin does not have any effect on the typhoid-dysentery group of germs.

The red mold pigment, if it proves effective as a remedy, could be given by mouth. Dr. Rosenthal's studies indicate.

Tests to determine whether it is poisonous or can be safely used and whether it would affect the germs in the body as well as in culture plates in the laboratory are now under way.

Science News Letter, September 8, 1945

Books of the Week

THE CONSTITUTION AND TOXIC EFFECT OF BOTANICALS AND NEW SYNTHETIC INSECTICIDES—P. Lauger, H. Martin and P. Muller—*Geigy Co.*, 43 p., paper, illus., free. Trans. of a paper read before the Basler Chemische Naturforschende und Medizinische Gesellschaft.

DIETOTHERAPY: Clinical Application of Modern Nutrition—Michael G. Wohl, ed.—*Saunders*, 1029 p., illus., \$10. Foreword by Russell M. Wilder.

EDUCATORS GUIDE TO FREE FILMS—Mary Foley Horkheimer and John W. Diffor, comps.—*Educators Process Service*, 254 p., paper, \$4. 5th ed., revised and enlarged.

ESSENTIAL VOCATIONAL MATHEMATICS—Claude H. Ewing and Walter W. Hart—*Heath*, 266 p., illus., \$1.60. A first year course for vocational and technical high school students.

EXPERIMENTAL STRESS ANALYSIS. Proceedings of the Society for Experimental Stress Analysis, Vol. 2, No. 2—C. Lipson and W. M. Murray, eds.—*Addison-Wesley*, 166 p., illus., \$5. Containing papers presented before the society's fall meeting and symposium on crankshaft stresses.

GOVERNMENT IN PUBLIC HEALTH—Harry S. Mustard—*Commonwealth Fund*, 219 p., \$1.50. A study of the New York Academy of Medicine, Committee on Medicine and the Changing Order.

MUSIC AND SOUND SYSTEMS IN INDUSTRY—Barbara Elna Benson—*McGraw*, 124 p., illus., \$1.50. Industrial Organization and Management Series. The organization of an industrial broadcasting system.

PIPING HANDBOOK—Sabin Crocker—*McGraw*, 1736 p., illus., \$7. Fourth ed., revised and enlarged. For the engineer interested in piping design.

POLITICAL PARTIES: An American Way—Public Affairs Committee, 32 p., paper, illus., 10 cents. In cooperation with the National Foundation for Education in American Citizenship. Basic American Concept Series.

PREVENTIVE MEDICINE—Mark F. Boyd—*Saunders*, 591 p., illus., \$5.50. 7th ed., revised and enlarged.

SOCIOLOGY APPLIED TO NURSING—Emory S. Bogardus and Alice B. Brethorst—*Saunders*, 312 p., illus., \$2.50. 2nd ed., revised and enlarged.

TEXTBOOK OF BACTERIOLOGY—Edwin O. Jordan and William Burrows—*Saunders*, 909 p., illus., \$7. 14th ed., revised and enlarged.

WHERE DO PEOPLE TAKE THEIR TROUBLES?—Lee R. Steiner—*Houghton*, 263 p., \$3.

Science News Letter, September 8, 1945

Cod fish was once the mainstay of the vitamin industry of the United States, but now cod contributes only about 1% of the output of vitamin A by American manufacturers.

A 10% reduction in losses of adult hens by disease would increase the total production of the nation's flocks by half a billion dozen eggs.



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Science News Letter, September 8, 1945

❁ **MOTORIZED** hand truck of the tilt-able type is a three-wheeled vehicle with the axle of the single wheel used as a fulcrum to tilt the platform for loading. By a sliding device on the frame where it is attached to the axle, the fulcrum point may be varied to balance the load.

Science News Letter, September 8, 1945

❁ **SHRIMP** fishing vessel on the Gulf of Mexico, the first of its kind, has on board complete equipment for the immediate processing and freezing of shrimp, and for refrigerating them. By this method a fresher and tastier product is furnished for the table.

Science News Letter, September 8, 1945

❁ **GUIDE** for a blind man is a light plow-handle-shaped cane, which he pushes along ahead of him. It rolls on a freely swivelled caster on the lower end. A horizontal wheel, mounted just above the caster, will roll along a vertical wall.

Science News Letter, September 8, 1945

❁ **PEACETIME** coffee percolator is expected to rest on an electrically heated base in which the heat is automatically turned down after the coffee is made. In appearance it will resemble the common percolator with two glass bowls.

Science News Letter, September 8, 1945



❁ **ELECTRONIC DRIER**, laboratory model, employs a 100-watt radio-frequency generator to provide heat for drying out liquids placed in a moderate vacuum under the small dome shown in the picture. It is designed for research men working with biological solutions and heat-sensitive chemicals.

Science News Letter, September 8, 1945

❁ **STORAGE** battery, utilizing the principle of the diving bell, and capable of operating while submerged in several feet of salt water, has been developed for motor vehicles in the Pacific war area. Seawater can enter a compression dome of proper size which houses a breather stand-pipe.

Science News Letter, September 8, 1945

❁ **WORLD GLOBES**, in easily separated halves, are made of a transparent plastic with outlines of geographical fea-

tures on the face. Removable films, spherical in shape and carrying various types of information, are furnished to insert within the globes and read through the transparent material.

Science News Letter, September 8, 1945

❁ **REVOLVING** shelves for refrigerators rotate by means of a central vertical shaft so that any article of food on them can be easily reached. The circular shelves are in sections so that any part can be removed for cleaning.

Science News Letter, September 8, 1945

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., N. W., Washington 6, D. C., and ask for Gadget Bulletin 275.

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